

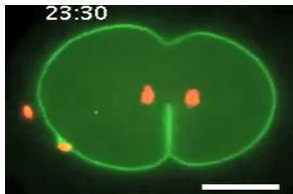


Regulation of Cell Division Timing by Contractile Ring Component Composition

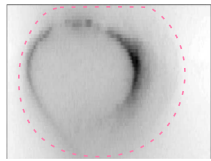


Cytokinesis is the process by which one cell divides into two, which is driven by a highly dynamic structure known as the contractile ring. The contractile ring is composed of many well-known cytoskeletal components including F-actin, **anillin**, **non-muscle myosin II (NMM2)**, and **septin**. Global depletion of motors and crosslinkers has been demonstrated to result in changes in contraction dynamics, and in some cases complete loss of division.

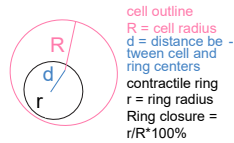
Here we seek to characterize how changes in the contractile ring-specific amounts of these components affects contractile ring structure and dynamics. Using a combination of quantitative light sheet microscopy and agent-based modeling, we will show how regulation of contractile ring composition affects division speed.



Longitudinal view



End-on view



cell outline
 R = cell radius
 d = distance between cell and ring centers
contractile ring
 r = ring radius
Ring closure = $r/R * 100\%$

